

**Scheme 1**  
**Catalytic composition disclosed by Hidalgo Llinas (EP 0 802 203)**

Solid precursor	Sequence of reactions of the support prior to contact it with the metallocene	Final form of catalyst
	 <b>Step 1 Functionalized silica</b>  <b>Step 2 :Funct.silica+ MAO</b>	 <b>Step 3 :After added metallocene</b>
Silica containing hydroxy groups. Siloxane bonds not shown for clarity	Functionalized silica with optional NR <sub>2</sub> H groups is reacted in a second step with MAO .	<p>Final catalytic composition:          Initial metallocene (Cp)<sub>2</sub>ZrCl<sub>2</sub> is alkylated "in situ" (not shown) and the active species is bonded via an anion-cation interaction with MAO itself attached through a "bifunctional" organic molecule containing at one end silica reacting groups and at the other end optionally amino groups.          [Cp = Cyclopentadienyl group]</p>

**Scheme 2**  
**Catalytic composition disclosed by instant patent application (US 09/299,539)**

Solid precursor	Sequence of reactions of the support prior to contact it with the metallocene	Final form of catalyst
	<p>Step 1 :Silica reacted with MAO</p>	<p style="text-align: center;">Simultaneous metallocene interaction</p> <p>Step 2 :Functionalized metallocene reacts with both silica surface siloxi bonds and MAO prereacted with silica.</p>
Silica containing hydroxy groups and siloxane groups	<p>Silica containing OH groups is made directly to react in one step with MAO. After reaction, it is expected that all OH groups react with MAO but most of the siloxane groups remain</p>	<p>Final catalytic composition:  Initial metallocene  <math>[Cp-(CH_2)_n-OSiR''_3](Cp)ZrCl_2]</math>  is alkylated "in situ" and the active species is bonded to the support via two main types of bonds (<b>simultaneous interaction</b>):  a) an anion-cation interaction with MAO itself attached directly to silica; and  b) a direct bond through the functional group attached to one of the Cp groups of the metallocene.  Alternatively: A coordinative bond of the type <math>R''_3SiO:Al</math> present in MAO could be formed instead for <i>some</i> metallocene molecules which eventually could not react with silica through the functional group as in the case above. In this case, also, an additional and simultaneous interaction occurs [which is not possible with non functionalized metallocenes (Welborn type metallocenes)]</p>